Bull. Mus. natn. Hist. nat., Paris, 4e sér., **5**, 1983,
section B, *Adansonia*, nº 4 : 335-360.

Studies in the Malesian, Australian and Pacific *Ingeæ* (*Leguminosæ-Mimosoideæ*) : the genera *Archidendropsis*, *Wallaceodendron*, *Paraserianthes*, *Pararchidendron* and *Serianthes*

(part 2)

I. Nielsen, Ph. Guinet & T. Baretta-Kuipers

Summary : The first part of this study (morphology, wood structure, geography, generic limit, systematic and artificial keys, description of new taxa and new combinations) has been published in this review (*Bulletin du Muséum, Adansonia* 5 (3) : 303-329 (1983). In this second part the authors consider the genera *Archidendropsis*, *Wallaceodendron* and *Paraserianthes* : keys, synonymies, typifications, descriptions, distribution and ecology of all species except the New Caledonian taxa which have been dealt with in detail in Flore de la Nouvelle-Calédonie 12 (1983).

Résumé : La première partie de cette étude (morphologie, structure du bois, limite générique, clés systématique et artificielle, description des nouveaux taxons et établissement de nouvelles combinaisons) a été publiée dans le *Bulletin du Muséum, Adansonia* 5 (3) : 303-329 (1983). Dans cette 2e partie, les auteurs traitent des genres *Archidendropsis*, *Wallaceodendron* et *Paraserianthes* : clé, synonymie, typification, description, distribution et écologie de chaque espèce à l'exception des taxons néo-calédoniens qui ont été étudiés en détail dans la Flore de la Nouvelle-Calédonie 12 (1983).

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ARCHIDENDROPSIS Nielsen

Flore de la Nouvelle-Calédonie et dépendances 12 : 66 (1983).
— *Albizia* § 1. *Spicifloræ* Benth., London J. Bot. 3 : 85 (1844), *p.p.*
— *Albizia* sect. *Spicifloræ* Benth. ser. *Platyspermæ* Benth., Trans. Linn. Soc., London 30 : 558 (1875).
— *Albizia* sect. *Spicifloræ* Benth. *emend.* Fosberg, Reinwardtia 7 : 73 (1965), *p.p.*

A list of the examined material is available upon request ; write to I. Nielsen, Aarhus.

— *Albizia* sect. II. — *Lophantha* (Miq.) Fourn., Ann. Sci. Nat., Bot., ser. 4, 15 : 172 (1861), *p.p.*
— « *Gen. B.* », Nielsen in Polhill & Raven (eds.), Adv. Leg. Syst. : 186 (1981).

Type-species : *Archidendropsis fulgens* (Labill.) Nielsen (= *Acacia fulgens* Labill. ; *Albizia fulgens* (Labill.) Benth.).

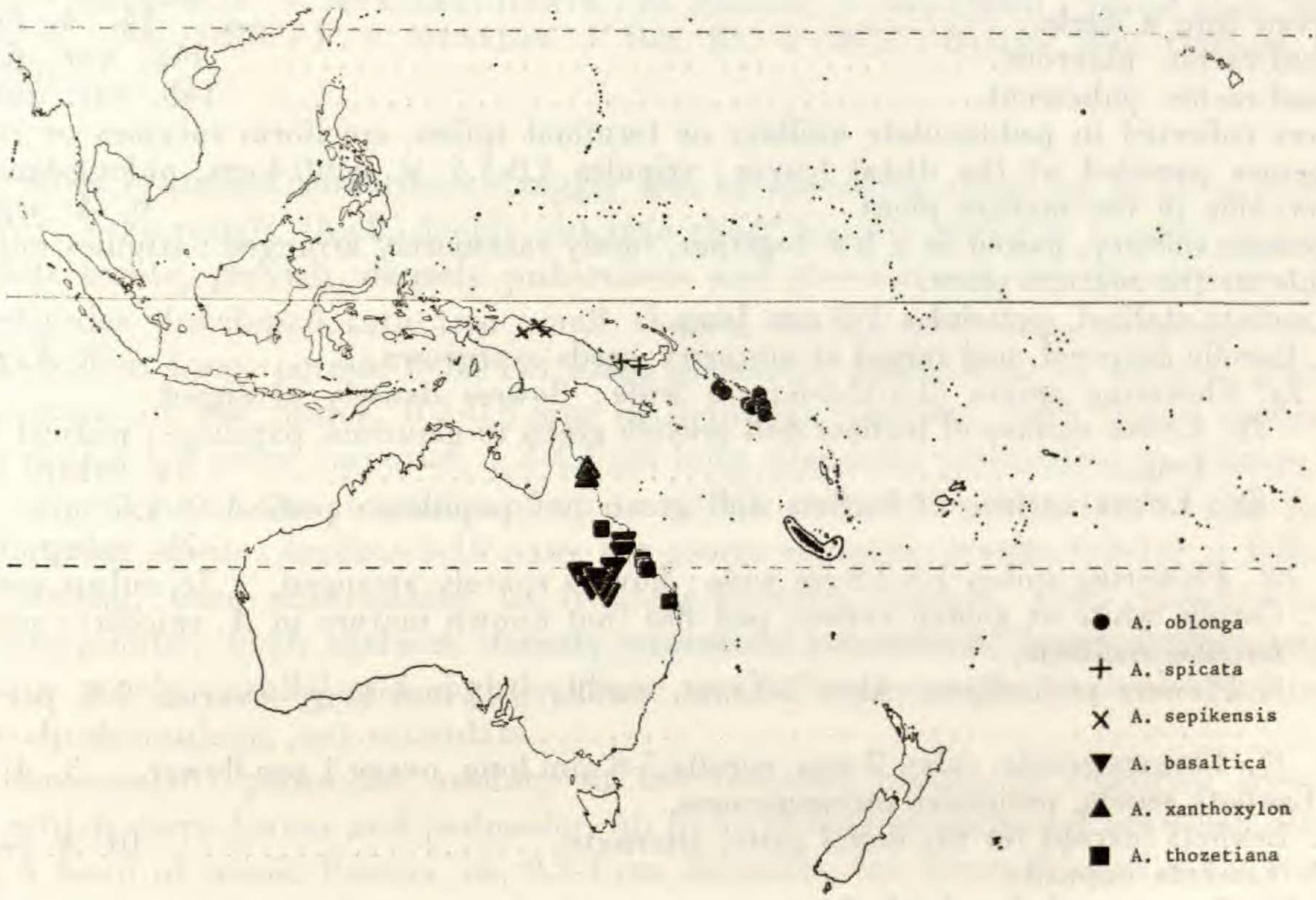
Pollen : Sexine/Nexine ratio : 2. Numerous tectal channels (40-60/100 μm^2). Pore diameter : 2.5-10 μm. Two clear-cut groups can be observed in this genus.

	Subg. *Basaltica*	Subg. *Archidendropsis*
Thickness of Sexine & Nexine	Sexine 2/Nexine 1 μm	Sexine 3/Nexine 1.5 μm
Polyad diam.	55-60 μm diam.	80-120 μm diam.
Pore diam.	2.5-3 μm	6-10 μm
Surface structure	Smooth in periferal cells, faint fossules in central cells	Small rounded areoles or deep fossules in all cells
Tectal Structure	Isometric channels	Non-isometric channels

Seedlings : The seedlings of the New Caledonian species *A. macradenia*, *A. paivana* subsp. *tenuispica* and *A. streptocarpa* were studied. The germination is epigeaous, cotyledons green, opposite and early caducous ; the first leaf is oncepinnate, the second is bipinnate, alternate with the first one ; the stipules are small and filiform, sometimes only visible in the seedling stage in other instances *A. sepikensis*, *A. basaltica*, *A. thozetiana* and *A. fournieri* persisting for a longer time.

Discussion : This genus has its distribution in New Caledonia (8 species), Queensland, Australia (3 species) and New Guinea-New Britain-Solomon Islands (3 species). All the species are endemic to their respective region a testimony of a long period of isolation. *Archidendropsis oblonga* (= *Archidendron oblongum*) from the Solomon Islands is the only species with numerous free ovaries per flower and was for this reason referred to *Archidendron.* Inflorescence morphology (long erect, terminal racemes), the flat pods and the reniform seeds brings it however close to the New Caledonian representatives. *Archidendropsis spicata* (= *Archidendron spicatum*) and *Archidendropsis sepikensis* have solitary ovaries, their pods are not known in ripe condition, but the immature ones are flat and straight ; because of the inflorescence structure and the general facies of the plants they are referred to this genus. The New Caledonian species have been dealt with in detail in " Flore de la Nouvelle-Calédonie 12 ". It is in this area that largest variation is found, the species showing an adaptation to the different ecological conditions. *A. fournieri* has large auriculate, persistent stipules ; flowers in paniculate, pedunculate heads and the pods curved, characters that led earlier authors to refer this to *Pithecellobium* (Bentham, 1875) or *Abarema* (Kostermans, 1954*b*). The pollen characters places it close to the spicate flowered species *A. fulgens*, *A. macradenia* and *A. glandulosa* from the same area. *A. paivana* (= *Albizia paivana*) has a slightly curved and a slightly turgid pod. The

seeds are overgrown (sensu Corner, 1951) ; but the testa has the same structure as that of *A. macradenia*, only the outer layer getting thickened cell-walls ; pollen morphologically this is related to *A. granulosa*, *A. streptocarpa* and *A. lentiscifolia*. It is for these reasons kept in the same genus as the other New Caledonian representatives.



Pl. 7. — Known distribution of the genus **Archidendropsis** Nielsen ; distributional area of New Caledonian species shaded.

The three Australian species have pod and seed characters similar to what is seen in the remaining species. However, 2 of the species, *A. basaltica* and *A. thozetiana*, have caducous, hard, stipules, reminding of stipular spines, a character which has not been observed in the other species. Pollen morphologically the two species have their nearest affinites with species of the genus *Albizia* (*A. carrii* & *A. guillainii*). It is a question whether these species should be referred to a separate genus i.e. that the evolution of the winged thin walled seeds without pleurogram should have happened twice. On the other hand the flowers are uniform and until further data are available we prefer to keep them as a separate subgenus, subg. *Basaltica*.

Key to the species (Artificial)

1. Flowers collected in pedunculate glomerules.
   2. Stipules small and inconspicuous, often developed into two small stipular spines, up to ca. 0.7 mm long, early caducous ; pod straight.
      3. Leaflets distinctly stalked, 3.5-9.8 × 1.9-4.6 cm, ovate-elliptic (-lanceolate)..... 3. *A. xanthoxylon*
      .....

3. Leaflets sessile.
4. Leaflets 5-10 pairs per pinna, 0.2-1.0 × 0.35-0.6 cm (ovate-) oblong ; base subtruncate to truncate/broadly cuneate. ..... 1. *A. basaltica*
4′. Leaflets 2-4 pairs per pinna, 0.6-2.8 × 0.2-1.2 cm (obovate-elliptic-) cuneate-oblong to broadly linear ; base asymmetrically cuneate..... 2. *A. thozetiana*
2′. Stipules large orbicular to cordate or auriculate, 0.9-4.4 × 0.7-3.5 cm, ± persistent ; pods curved into a circle..... 14. *A. fournieri*
2′a. Leaf-rachis glabrous..... 14a. var. *fournieri*
2′b. Leaf-rachis pubescent..... 14b. var. *auriculata*
1′. Flowers collected in pedunculate axillary or terminal spikes, spiciform racemes or racemes.
5. Racemes panicled at the distal leaves ; stipules 1.0-1.4 × 0.3-0.4 cm, oblong-lanceolate, observable in the mature plant..... 6. *A. sepikensis*
5′. Racemes solitary, paired or a few together, rarely racemosely arranged ; stipules not observable in the mature plant.
6. Leaflets stalked, petiolules 1-3 mm long.
7. Corolla deep-red, pod turgid at maturity, seeds overgrown..... 7. *A. paivana*
7a. Flowering spikes (2.5-)3.5-6.5 cm wide ; flowers densely arranged.
7b. Lower surface of leaflets dull greyish green to glaucous, papillose ; pedicel 1-2 mm long..... 7a. subsp. *paivana*
7b′. Lower surface of leaflets dull green not papillose ; pedicel 0(-1.5) mm..... 7b. subsp. *balansæ*
7a′. Flowering spikes 1.5-2.8 cm wide ; flowers spacely arranged. 7c. subsp. *tenuispica*
7′. Corolla white or golden yellow, pod flat (not known mature in *A. spicata*) ; seeds flat, circular-reniform.
8. Flowers pedicellate, calyx 5-7 mm, corolla 9-11 mm long, ovaries 3-5 per flower ..... 4. *A. oblonga*
8′. Flowers sessile, calyx 2 mm, corolla 5-6 mm long, ovary 1 per flower. 5. *A. spicata*
6′. Leaflets sessile, petiolules inconspicuous.
9. Leaflets (except for the distal pairs) alternate..... 10. *A. granulosa*
9′. Leaflets opposite.
10. Leaves with 1 pair of pinnæ.
11. Corolla glabrous, stamens deep-red, pod brown to reddish brown. 9. *A. glandulosa*
11′. Corolla densely sericeous, stamens white or rosy, pod yellowish..... 13. *A. streptocarpa*
10′. At least some of the leaves in the specimen with 2-7 pairs of pinnæ.
12. Leaflets 2-4(-5) pairs per pinna, 2.5-8.1 × (0.6)-1.2-4 cm, asymmetrically obovate-ovate, elliptic or lanceolate to oblanceolate ; inflorescence glabrous ; filaments bright red. ..... 8. *A. fulgens*
12′. Leaflets (5-)7-22 pairs per pinna, (0.6-)1-2 × 0.2-0.8 cm, subtrapezoid to asymmetrically oblong ; inflorescence pubescent ; filaments greenish-white to pale yellow.
13. Base of leaflets half rounded (half cuneate) ; bracts in the inflorescence triangular hastate, 0.5-0.6 mm ; calyx 1.2-2.3 mm, subcampanulate to campanulate, densely puberulous..... 11. *A. lentiscifolia*,
13′. Base of leaflets asymmetrically cuneate ; bracts in the inflorescence linear-filiform, 1-1.5 mm ; calyx 2.2-4.5, subcampanulate to tubular, glabrous or with a few scattered hairs..... 12. *A. macradenia*

A. **Archidendropsis** subg. **Basaltica** Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 325 (1983).

Type : *Archidendropsis basaltica* (F. v. Mueller) Nielsen (= *Acacia basaltica* F. v. Mueller = *Albizia basaltica* (F. v. Muell.) Bentham).

Differing from subg. *Archidendropsis* in having small, rigid, early caducous stipules, pollen with small polyads (60-65 μm) in diameter, and a narrow pore diameter, 2.5-3 μm.

1. **Archidendropsis basaltica** (F. v. Mueller) Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 326 (1983).
— *Acacia basaltica* F. v. Mueller, J. Proc. Linn. Soc., Bot. 3 : 146 (1859).
— *Albizia basaltica* (F. v. Mueller) Benth., Fl. Austral. 2 : 422 (1864) ; Trans. Linn. Soc., London 30 : 566 (1875) ; F. v. Mueller, J. Bot. 10 : 9 (1872) ; Bailey, Syn. Queensl. Fl. : 145 (1883).

A richly branched sometimes straggly tree or spreading shrub up to 10 m high ; bark dark grey, very rough, thick, deeply cut into short fissures giving it a corky appearance ; branchlets terete, greyish, densely puberulous and glandular in the distal parts, glabrescent ; stipules developed into two small thorns, ca. 0.7 mm long, caducous. Leaves : rachis 0-1.9 cm long, petiole 0-1.0 cm long, glandular puberulous to hirsute, gland(s) at the junctions of the pinnæ, 0.2-0.8 mm in diameter, circular, with raised central part, sessile ; pinnæ 1-2 pairs, opposite, 1.3-4.1 cm long, glandular puberulous to hirsute, glands absent or present at the junctions of up to all the pairs of leaflets, 0.1-0.2 mm in diam., inconspicuous, sessile ; leaflets 5-10 pairs per pinna, opposite, sessile, 0.2-1.0 × 0.35-0.6 cm (ovate-)oblong, base subtruncate to truncate/broadly cuneate, apex rounded-truncate, often emarginate ; both surfaces densely canescent puberulous, lower surface papillose ; main vein nearly parallel and slightly closer to the front margin ; lateral veins inconspicuous to prominulous, not reticulate.

Inflorescence : peduncles axillary at the terminal leaves, or emerging from short-shoots, which carry leaves and peduncles, up to 4 cm long, densely red brownish glandular, bearing a head of sessile flowers, ca. 0.5-1 cm diameter, the lower flowers of the head subtended by a 0.9-1.2 mm long, spathulate, concave, glandular bract (a solitary flower can often be observed just below the head). Flowers pentamerous (-hexamerous), yellow ; calyx 1.5-3.0 mm, subcampanulate, densely glandular at the teeth and in the distal part, proximal part glabrous ; teeth 0.4-0.5 mm, triangular ovate, acute ; corolla 2.5-4 mm, narrowly campanulate, glabrous except for the densely glandular apices of the lobes ; lobes 0.5-1.5 mm, ovate, acute ; stamens up to 5 mm, tube 2-2.5 mm, about as long as to exceeding the corolla-tube ; ovary solitary, 0.8-1.2 mm, glabrous, stipe up to 0.5 mm long, style about as long as the stamens, stigma tubular, concave.

Pod brownish, chartaceous, 4.2-11.5 × 0.5-1.5 cm, oblong, flat, straight, densely puberulous, glandular, glabrescent, dehiscing along both sutures ; valves with dense, prominulous, transverse, anastomosing veins. Seeds 5-9 × 5.5-10 × 0.5-1 mm, flat, quadrangular to circular in circumscription, with a narrow ca. 0.2 mm broad, marginal wing ; testa thin, flaking.

Type : *F. v. Mueller 42*, Australia, Queensland, Peak Downs (holo-? MEL ; iso-, K).

Distribution : Australia, S. Queensland (Endemic).

Ecology : Recorded from sandy ridges, heavy brown soil, pebbly sandy soil ; in *Eucalyptus*-woodlands associates with *Eucalyptus populnea* and *Eremocitrus* ; in *Eucalyptus* and *Acacia* (Brigalow) forest ; alt. up to ca. 400 m.

Uses : The foliage and young branches are excellent sheep-fodder.

Vernacular names : Red Lamewood ; Dead finish.

2. **Archidendropsis thozetiana** (F. v. Mueller) Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 326 (1983).
— *Acacia thozetiana* F. v. Mueller, Fragm. Phyt. Austral. 4 : 9 (1863).
— *Albizia thozetiana* (F. v. Mueller) F. v. Mueller ex Benth., Fl. Austral. 2 : 422 (1864) ; Trans. Linn. Soc., London 30 : 566 (1875) ; F. v. Mueller, J. Bot. 10 : 9 (1872) ; Bailey, Syn. Queensl. Fl. : 145 (1883).

Tree ; branchlets terete, greyish, puberulous, early glabrescent ; stipules small and inconpicuous, ca. 0.5 mm long, triangular-ovate, reddish glandular haired, very early caducous, resembling stipular thorns. Leaves : rachis (= petiole) 0.3-1.5 cm long, puberulous, gland at the junctions of the pinnæ, 0.3-0.5 mm in diameter, circular-transversely elliptical, sessile, cushion-shaped but sometimes slightly sunken in the central part ; pinnæ 1 pair, puberulous, 0.6-2.4 cm long ; gland at the junction of the terminal pair of leaflets, less than 0.5 mm in diameter, circular, sessile, cushion-shaped, sometimes absent ; leaflets 2-4 pairs per pinna, opposite, sessile, chartaceous, 0.6-2.8 × 0.2-1.2 cm (obovate-elliptic-) cuneate-oblong to broadly linear ; base asymmetrically cuneate, apex obtuse, rounded, both surfaces glabrous or lower surface faintly puberulous, glabrescent ; both surfaces with hardly visible reticulate veins.

Inflorescence : peduncles terminal and axillary, 1-2.5 cm long bearing heads of sessile flowers, ca. 0.7-1.0 cm in diam., subtended by 0.5-1.5 mm long, ovate-cuneate bracts. Flowers pentamerous, colour ? ; calyx 2-2.5 mm long, subtubular (slightly asymmetrical, the two lower lobes beeing united higher up), densely puberulous and covered by sessile glands ; teeth 0.3-0.5 mm long, triangular, acute ; corolla 2.5-3.2 mm long, tubular, tube glabrous, lobes 0.5-1 mm long, triangular ovate, acute, puberulous ; stamens ca. 5 mm long, tube 2.5-3 mm long, equalling to exceeding the corolla tube ; ovary solitary, ca. 1 mm long, inconspicuously stipitate, with a few microscopical hairs.

Pod brown, chartaceous, up to 18 × 2.2 cm, oblong, flat, with sinuate margins, narrowing towards both ends, faintly puberulous, dehiscing along both sutures ; valves with prominulous to inconspicuous transverse reticulate veins. Seeds flat, circular, ca. 9 mm in diameter with a marginal, narrow, 0.5-1 mm broad wing, testa thin and flaking.

Syntypes : *Dallachy s.n.*, Australia, Queensland, Thozet's Creek ; *K. Thozet s.n.*, Australia, Queensland, " ad montem Fort Cooper ", MEL ? (not seen).

Distribution : Australia : S. Queensland (Endemic).

Ecology : Recorded from deciduous vine-thicket and scrub ; alt. 300 m.

3. **Archidendropsis xanthoxylon** (C. White & Francis) Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 326 (1983).
— *Albizia xanthoxylon* C. White & Francis, Proc. Roy. Soc. Queensl. 41 : 141, *tab. X* (1929) ; Francis, Austral. Rainf. Trees : 419 (1951).

Tree 25-37 m high, 0.4-0.8 m in d.b.h. ; bole slightly spurred at base ; outer bark greyish marked with longitudinal lines of lenticels ; blaze yellowish brown ; young branches terete with a dark, tomentulose glandular indumentum, soon glabrescent ; stipules not observed. Leaves : rachis 1.5-2.5 cm long, puberulous, petiole to 2.5 cm long, glands at the junctions of the pinnæ, ca. 2 × 2 mm, triangular to rhombic in circumscription, slightly raised, flat, or slightly depressed ; pinnæ 1-2 pairs, puberulous, 5.5-10 cm long, acuminate, with glands at the junction of the petiolules ; gland 1-1.2 mm in diameter, circular, raised, sessile, flat ; leaflets 3-4 pairs per pinnæ, opposite, petiolulate, petiolules 4-7 mm long, ± puberulous, rigidly chartaceous, 3.5-9.8 × 1.9-4.6 cm, ovate-elliptic, elliptic (-lanceolate) ; base ± symmetrically cuneate, apex obtusely acuminate ; both surfaces glabrous except for the occasionally puberulous main vein ; lateral veins prominent and reticulate on both surfaces.

Inflorescence : peduncles 1-2 cm long, collected in terminal and axillary puberulous panicles to 35 cm long ; peduncles up to 4 together serially arranged in clusters bearing heads ca. 1.5 cm in diameter of sessile flowers, each subtended by a ca. 1 mm long spathulate, concave, puberulous bract. Flowers pentamerous, cream ; calyx 2.5 mm, tubular, glabrous except for the margins ; teeth inconspicuous, 0.1-0.2 mm long ; corolla 6.5-7 mm long, tubular, glabrous except for the tip of the lobes ; lobes 1.5 mm long, ovate, acute ; stamens probably ca. 9 mm long, tube ca. 5.5 mm long slightly longer than the corolla tube ; ovary solitary, 2 mm long, stipe 3 mm long, glabrous, style ca. 11 mm long, stigma tubular.

Pod brown, chartaceous, 6-10 × 1.8-1.9 cm, oblong, flat, glabrous, dehiscing along both sutures ; valves with prominent, reticulate veins. Seeds flat, circular to obliquely ovate-cordate, 8-12 × 9-11 × 0,5 mm, bordered by a 0.5 mm wide wing ; testa brown, thin, membranaceous.

Type : *Overseer Brothers*, Australia, N. Queensland, Atherton District, Oct. 1927, fl., fr. (holo-, BRI ; iso-, K).

Distribution : Australia : N. Queensland (Endemic).

Ecology : Rain-forest at low altitudes ; alt. to 180 m.

B. **Archidendropsis** subg. **Archidendropsis**

4. **Archidendropsis oblonga** (Hemsley) Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 326 (1983).
— *Hansemannia oblonga* Hemsley, Kew Bull. 1892 : 125.

— *Archidendron oblongum* (Hemsley) de Wit, Bull. Bot. Gard. Buitenz. 17 : 269 (1942) ; Reinwardtia 2 : 90 (1952) ; Whitmore, Guide For. Brit. Solom. Isl. : 82 (1966) ; Verdc., Man. N.G. Leg. : 246 (1979).
— *Pithecellobium carnosum* Mohlenbrock, Webbia 21 : 706, *fig. 25* (1966).

Tree up to 40(-48) m high, girth up to ca. 4 m ; bole columnar bearing plank-like buttresses up to 3 m long ; bark brown or grey, smooth or rough, fissured, with corky lenticels ; young branches terete, brownish with light circular lenticels, shortly glandular pubescent, soon glabrescent ; stipules not observed. Leaves : rachis to 9 cm long, shortly glandular puberulous, glabrescent ; petiole 1.5-5 cm long ; gland(s) 0.7-3 cm above the base and at the junctions of the pinnæ, ca. 1-1.5 mm in diameter, circular, sessile, slightly raised, flat (-concave) ; pinnæ 1-2 pairs, up to 17 cm long, glabrous, terete, not grooved ; glands at the junctions of the petiolules, 1-1.5 mm in diameter, circular, flat, sessile ; leaflets 3-5 pairs per pinnæ, opposite, chartaceous, petiolulate, petiolule 2-3 mm long (3-)8-20 × (1.7-)3-6.5 cm (ovate-elliptic) oblong ; base asymmetrically rounded to broadly cuneate, apex acute, sometimes subacuminate ; both surfaces glabrous, lateral veins prominulous above, prominent beneath, reticulate.

Inflorescence : flowers collected in solitary, axillary and terminal, erect, shortly glandular tomentose racemes up to ca. 28 cm long (incl. peduncle ca. 7 cm long) ; pedicel 3-15 mm long, in bud subtended by ca. 4 mm long, linear, puberulous, early caducous bracts. Flowers tetra- to pentamerous ; calyx ferrugineously tomentose, 5-7 mm long, deeply split in 2 lips when flowering ; corolla dull gold, 9-11 mm long, funnel-shaped, densely sericeous, lobes ca. 5 mm long, ovate to elliptic, acute ; stamens golden yellow (with a musty smell) ca. 15 mm long, tube 4-5 mm long, about equalling that of the corolla ; ovaries 3-5 per flower, sessile, densely woolly.

Pod (said to be green in fresh condition) shortly brownish tomentose, chartaceous to thinly coriaceous, up to 30 × 2.2-3 cm, straight to slightly curved, oblong, flat, constricted between the seeds, dehiscing first along the ventral suture ; valves with obscure, reticulate veins. Seeds flat, broadly reniform, ca. 27 × 20 × 2-3 mm, with a narrow marginal ca. 0.4 mm wide wing ; testa thin, membranaceous, flaking.

Type : *Comins 102*, Solomon Islands, Malaita, fl. (holo-, K ; iso-, L).

Distribution : Solomon Islands ; San Cristobal, Guadalcanal, Malaita, Kolombangara.

Ecology : Primary riverine forest, also periodically flooded forest, alluvial flats, well drained soil ; alt. sea level to 130 m.

Notes : For more detailed description of bark and wood please see Whitmore, *l.c.* This species has earlier been referred to the genus *Hansemannia* because of the racemose inflorescences, to *Archidendron* by de Wit, *l.c.* because of the pluricarpellate flowers. It is in facies close to *A. spicatum* and *Wallaceodendron celebicum*.

5. **Archidendropsis spicata** (Verdc.) Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 326 (1983).
— *Archidendron spicatum* Verdc., Kew Bull. 32 : 229 (1977) ; Man. N.G. Leg. : 253 (1979).

Tree 30-42 m high, trunk 25 m high, 0.75-0.9 m in diameter ; bark light brown or grey-brown with prominent vertical lines of lenticels ; young branches rusty tomentose, glabrescent ; stipules not observed. Leaves : rachis 2.2-9.5 cm long, densely rusty tomentose, petiole 2.2-3 cm long, gland(s) at the junctions of the pinnæ, 1.5-2 mm in diameter, circular to triangular in circumscription, slightly raised, flat ; pinnæ 1 to 2 pairs, 11.5-16.5 cm long, densely rusty tomentose, slightly grooved dorsally ; glands at the junctions of the petiolules, 1.5 mm in diameter, ± circular, flat, slightly raised ; leaflets 4-6 pairs per pinnæ. opposite, petiolulate, petiolules 1 mm long, chartaceous, 3.5-13.5 × 1.8-5 cm, oblong ; base asymmetrically obliquely rounded to slightly subcordate ; apex obtusely acuminate ; both surfaces glabrous or the main vein slightly puberulous above ; lateral veins prominulous, reticulate.

Inflorescence : flowers collected in solitary or paired spikes in the upper leaf-axils ; spikes 15-35 cm long, puberulous, with small, inconspicuous, caducous bracts ca. 0.2 mm long, placed ca. 2 mm beneath the flower. Flowers pentamerous ; calyx pale green, 2 mm long, cup-shaped, puberulous, margins slightly undulate ; corolla white, 5-6 mm long, funnel-shaped, sericeous in the distal part, glabrous in the proximal, 2-3 mm, lobes 1.5-2.5 mm, triangular-ovate, acute ; stamens ca. 16 mm long, tube ca. 3 mm long, equalling the corolla-tube, ovary solitary, substipitate, ca. 1-1.5 mm long, villous ; style ca. 18 mm long, projecting beyond the stamens, stigma concave but only slightly widened.

Pod (not known in ripe condition) : ca. 24 × 1.6 cm, flat, with slightly raised margins, rusty tomentose. Seeds ?

Type : *Conn & Katik* in *LAE 66082*, New Guinea, Liplip-Mambi area, Subdistr. — Finschhafen — Umboi Isl., Morobe District (holo-, LAE ; iso-, A, BISH, BM, BO, BRI, CANB, E, K, L, M, NSW, PNH, QRS, SING, US).

Distribution : New Guinea ; Umboi Island ; New Britain.

Ecology : Lowland rain-forest, alt. 15-200 m.

6. **Archidendropsis sepikensis** (Verdc.) Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 326 (1983).
— *Albizia sepikensis* Verdc., Kew Bull. 32 : 473 (1978) ; Man. N.G. Leg. : 193 (1979).
— *Albizia* "*sp.*", Verdc., Man. N.G. Leg. : 195 (1979).

Tree to 24 m high ; trunk 18 m, 0.37 m in diameter ; bark pale whitish ; young branches densely ferrugineously tomentose, with linear light lenticels ; stipules 10-14 × 3-4 mm, oblong-lanceolate, acute, densely tomentellous, early caducous. Leaves : rachis 15-34 cm long, ferrugineously hirsute to tomentose, petiole 3.5-6 cm long ; glands at to slightly

below the junctions of the pinnæ, 1.5-3 mm in diameter/long, elliptic to circular, sessile, with raised and sharp margins ; pinnæ 6-14 pairs, (3-)5.5-13 cm long, tomentose ; glands slightly below the junctions of the pinnæ, ca. 0.6-1 mm in diameter, circular, raised, concave, sessile ; leaflets (5-)11-25 pairs per pinna, opposite, sessile, thinly chartaceous, (0.5-) 0.7-1.6 × (0.3-)0.5-0.7 cm, asymmetrically oblong to subfalcate ; base half truncate-rounded/ half cuneate ; apex asymmetrically rounded ; both surfaces glabrous except for the main vein, which is ciliate above, margins ciliate ; lateral veins prominent and reticulate on both surfaces.

Inflorescence : peduncles collected in axillary, tomentose to ferrugineously hirsute panicles at the distal leaves ; panicles up to 37 cm long, primary lateral branches up to ca. 20 cm long, peduncles ca. 2.5 cm long bearing 1.5-5.5 cm long spiciform racemes, pedicel 0.5-2 mm long, subtended by inconspicuous bracts ; flowers pentamerous, white ; calyx 2-2.5 mm long, campanulate, densely sericeous, teeth 0.5-1 mm long, triangular-deltoid, acute ; corolla 5-5.3 mm long, funnel-shaped, sericeous ; lobes 2.2-3.5 mm long, oblong-lanceolate, acute to acuminate ; stamens 14-20 mm long, tube 3-4 mm long, longer than the corolla tube ; ovary 1-2 mm, solitary, sessile to shortly stipitate, glabrous to puberulous.

Pod (not known in ripe condition) 8.5-16.5 × 2-3 cm, oblong, flat, with slightly thickened margins, gradually narrowing in the stalk ; valves with obscure, reticulate veins ; and with a few scattered hairs, glabrescent. Seeds ?

Type : *Foreman & Kumul* in *NGF 48302*, New Guinea, West Sepik District, Amanab Subdistrict (holo-, LAE ; iso-, A, BISH, BO, BRI, CANB, K, LAE, NSW, SING).

Distribution : New Guinea (endemic).

Ecology : Rain-forest on Basaltic soil (W. Irian), alt. up to 350 m.

Note : Miss Amshoff was going to describe this species under the name "*Albizia racemosa*" in her manuscript on New Guinea Legumes prepared during World War II. It was unfortunately never published. Verdcourt, *l.c.*, described it as *Albizia sepikensis* and based the description on the Foreman & Kumul specimen cited above. This specimen has young pods, a prolonged old inflorescence, and glabrous, substipitate ovaries, opposed to *F. de Bruyn 106* (BO) from W. Irian on which Miss Amshoff based her description and which has a young and more compact inflorescence and flowers with puberulous and sessile ovaries. These specimens might represent two different subspecies or perhaps even species, but until the pods and more flowering material have been collected I prefer to keep them within the present variable species.

7. **Archidendropsis paivana** (Fourn.) Nielsen

Flore de la Nouvelle-Calédonie et dépendances 12 : 76 (1983).
— *Albizia paivana* Fourn., Ann. Sci. Nat., Bot. 15 : 172 (1861) ; Benth., Trans. Linn. Soc., London 30 : 558 (1875).

Distribution : Endemic to New Caledonian where three subspecies are recognized.

a. subsp. **paivana**

Type : *Vieillard 420*, " ad Tiari " (lecto-, P).

Distribution : N.W. part of New Caledonia and off-shore islands.

Ecology : Dry thickety hillsides, maquis and gallery forest on serpentine soil ; alt. sea-level to 800 m.

b. subsp. **balansæ** Nielsen

Flore de la Nouvelle-Calédonie et dépendances 12 : 79 (1983).

Type : *Leenhardt 459*, Poindimié (holo-, P).

Distribution : N.E. part and along the E. coast of New Caledonia.

Ecology : Recorded from gallery forest, creek sides, scrub, also on serpentine ; alt. sea-level to 400 m.

c. subsp. **tenuispica** (Harms) Nielsen

Flore de la Nouvelle-Calédonie et dépendances 12 : 80 (1983).

— *Albizia tenuispica* Harms, Rep. nov. Spec. Regni veg. 10 : 128 (1911).

Type : *Franc 794*, " Baie Nord à Prony ", Jan. 1907, fl. (holo-, P).

Distribution : S. part of New Caledonia.

Ecology : Dense mesophytic and hygrophytic forest, also gallery forest ; alt. sea-level — 250 m.

8. **Archidendropsis fulgens** (Labill.) Nielsen

Flore de la Nouvelle-Calédonie et dépendances 12 : 82 (1983).

— *Acacia fulgens* Labill., Sert. Austr. Caled. 2 : 68, *tab. 67* (29-31.10.1825).

Type : *Labillardière s.n.*, " Austro-Caledonia " (holo-, FI ; iso-, BM, K, P).

Distribution : Endemic to N.E. part of New Caledonia.

Ecology : Recorded from mesophytic and humid forest on shales, also mica-shales ; along borders of creeks ; alt. 10-650 m.

Notes : The horticulturalist William Anderson collected the first specimen of this species, when James Cook visited New Caledonia in 1774. This is also the oldest collection of the genus.

9. **Archidendropsis glandulosa** (Guillaumin) Nielsen

Flore de la Nouvelle-Calédonie et dépendances 12 : 86 (1983).
— *Albizia glandulosa* Guillaumin, Bull. Soc. Bot. Fr. 83 : 313 (1936).

Type : *Balansa 320*, New Caledonia, " Rives de la Dombéa au-dessus de Koé " (holo-, P ; iso-, A, K).

Distribution : Endemic to New Caledonia.

Ecology : Rocky woodlands, maquis, gallery forest on serpentine soil ; alt. sea-level to 600 m.

10. **Archidendropsis granulosa** (Labill.) Nielsen

Flore de la Nouvelle-Calédonie et dépendances 12 : 89 (1983).
— *Acacia granulosa* Labill., Sert. Aust. Caled., pars post. : 67, *fig. 66* (1825).

Type : *Labillardière s.n.*, New Caledonia (holo-, FI, not seen).

Distribution : Endemic to New Caledonia, Ile des Pins and Maré.

Ecology : Recorded from hygrophytic and mesophytic forest, from littoral forest and gallery forest ; serpentine soil and Cretassic shales ; alt. sea-level to 900 m but most records are from 0-300-400 m.

11. **Archidendropsis lentiscifolia** (Benth.) Nielsen

Flore de la Nouvelle-Calédonie et dépendances 12 : 93 (1983).
— *Albizia lentiscifolia* Benth., Trans. Linn. Soc., London 30 : 559 (1875).

Type : *Vieillard 2515*, New Caledonia, " pied des montagnes à Gatope " (holo-, K ; iso-, G, NY, P).

Distribution : Endemic to the N. part of New Caledonia.

Ecology : Recorded from scrubby vegetation on rocky and alluvial, serpentine soil, in ravines and at borders of creeks ; alt. 5-700 m, but most records from low altitudes.

12. **Archidendropsis macradenia** (Harms) Nielsen

Flore de la Nouvelle-Calédonie et dépendances 12 : 96 (1983).
— *Albizia macradenia* Harms, Repert. nov. Spec. Regni veg. 10 : 128 (1911).

Type : *Franc 618*, sér. A, " à Dumbéa , 300 m, Nov. 1906 " (holo-, P ; iso-, BM, G, GH, NY).

Distribution : Endemic to the S. part of New Caledonia.

Ecology : Recorded from maquis on serpentine soil, also in gallery forest ; one record from peridotite and ferrugineous andesite ; alt. 5-800 m.

13. **Archidendropsis streptocarpa** (Fourn.) Nielsen

Flore de la Nouvelle-Calédonie et dépendances 12 : 99 (1983).
— *Albizia ? streptocarpa* Fourn., Bull. Soc. Bot. Fr. 12 : 399 (1865).

Type : *Vieillard 418*, New Caledonia, " Arbre montagne de Balade " (holo-, P).

Distribution : Endemic to New Caledonia.

Ecology : Recorded from humid, montane forest on shales, often on ridges, but also recorded from gallery forest at lower altitude ; alt. 10-800 m, most collections from 100-600 m.

14. **Archidendropsis fournieri** (Vieill.) Nielsen

Flore de la Nouvelle-Calédonie et dépendances 12 : 70 (1983).
— *Albizia fournieri* Vieill., Bull. Soc. Linn. Norm. 9 : 341 (1863-64).

a. var. **fournieri**

Type : *Vieillard 427*, New Caledonia, " arbre bois des montagnes, Balade " (holo-, P).

Distribution : Endemic to New Caledonia.

Ecology : Gallery forest, humid ravines, on alluvial and clayey soil derived from shales, also on calcareous soil ; alt. up to 500 m.

b. var. **auriculata** (Charpentier ex Fourn.) Nielsen

Flore de la Nouvelle-Calédonie et dépendances 12 : 73 (1983).
— *Albizia auriculata* Fourn., Bull. Soc. Bot. Fr. 12 : 400 (1865).

Type : *Charpentier s.n., legit Pancher*, New Caledonia (holo-, G).

Distribution : Endemic to New Caledonia.

Ecology : Gallery forest on shales and serpentine rocks ; alt. up to 700 m.

WALLACEODENDRON Koorders

Meded. Lands Plantentuin 19 : 446, 630 (1898) ; Nielsen in Polhill & Raven (eds.), Advances in Leg. Syst. : 186 (1981).

Unarmed tree ; stipules not observed ; leaves bipinnate, rachis and pinnæ with extra-floral nectaries ; leaflets opposite.

Inflorescence of axillary, pedunculate racemes in the upper leaf-axils ; flowers uniform, bisexual, subtended by ca. 2 mm long, triangular, early caducous bracts, pentamerous ; calyx gamosepalous, valvate ; corolla gamopetalous, valvate ; stamens numerous, united into a tube at the base, staminal tube and corolla tube shortly united at the base ; ovary solitary.

Pod woody, flat, straight to slightly curved, tardily dehiscent, not segmented, not reddish inside ; exocarp thin, crustaceous, mesocarp woody, endocarp chartaceous loosening and at the dehiscence forming small closed envelopes around each seed. Seeds flattened, circular, unwinged, with pleurogram, without aril ; testa a thick sclero-testa ; endosperm absent ; cotyledons large.

Type-species : *Wallaceodendron celebicum* Koord.

Pollen : Sexine/Nexine ratio : 2.8. Numerous tectal channels (40-60/100 μm^2) of small (0.3 μm) diam. ; channels non-isometric. Exine very thick (Sexine : 4.5 μm-Nexine 1.6 μm). Pore diam. 7-10 μm. Surface fossulate or more or less regularly organized in areoles.

Discussion : A monotypic genus defined mainly by its peculiar pod characters. It is related to *Archidendropsis* (*A. solomonensis*, *A. spicata*) having similar vegetative habit and inflorescence morphology and to *Serianthes* having woody, but tardily dehiscent pods. Pollen morphologically it is very close to *Archidendron* ser. *Bellæ* and ser. *Archidendron*. Wood anatomically it is related to *Archidendropsis oblonga* and to a lesser degree to *Archidendropsis granulosa*.

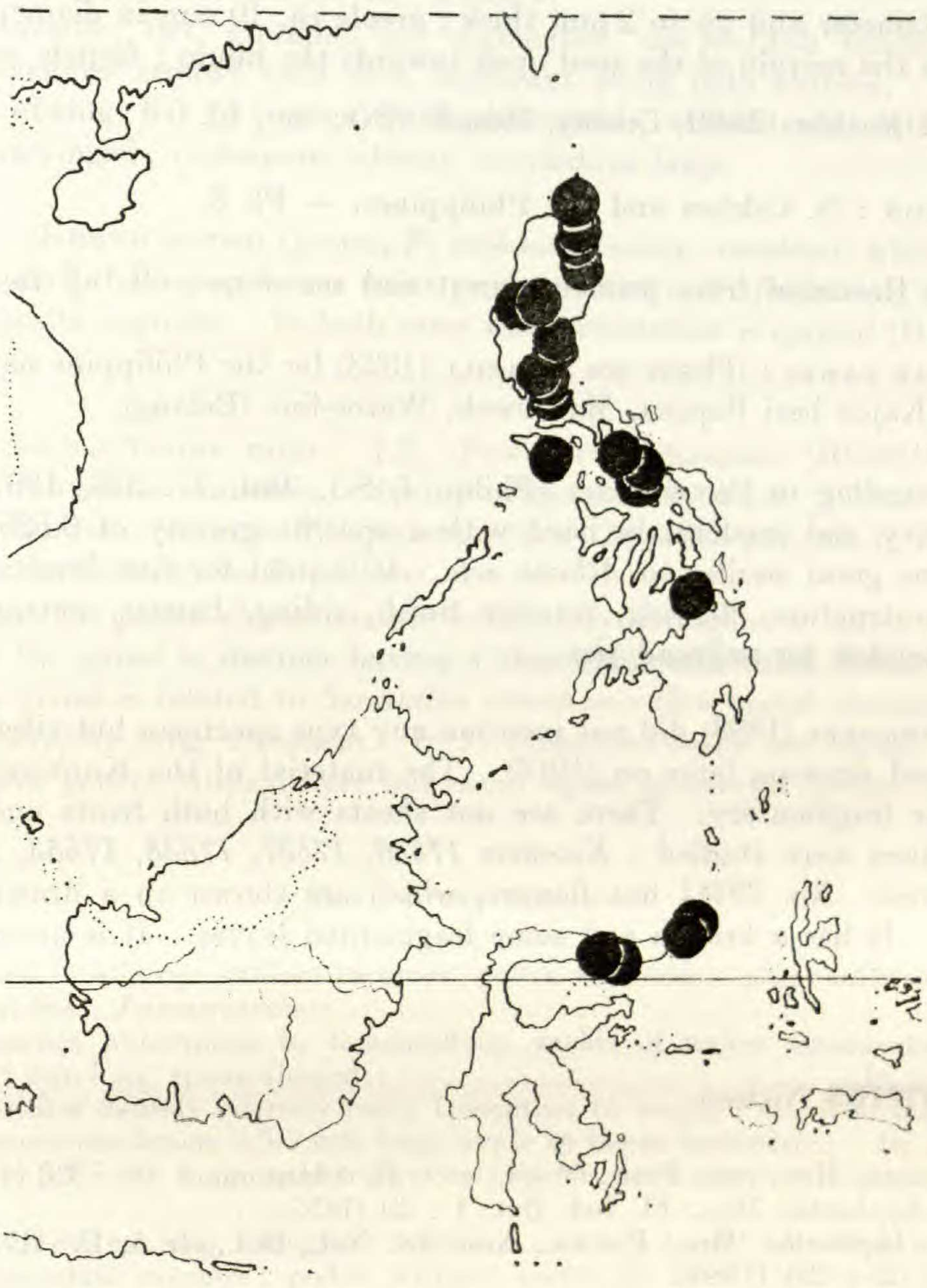
Wallaceodendron celebicum Koorders

Meded. Lands Plantentuin 19 : 446, 631 (1898) ; Suppl. Cel. 1 : 3-6 ; *tab. 1a-1b* (1918) ; Gilg in Engl. & Prantl, Nat. Pflanzenfam., Nachtr. II : 30 (1900) ; Merrill, Philip. Bur. For. Bull. 1 : 23 (1903) ; Philip. J. Sci., Bot. 3 : 409 (1908) ; 5 : 26 (1910) ; En. Philip. 2 : 245 (1923) ; Perk., Fragm. Fl. Philip. : 5 (1904-5).

— *Pithecellobium williamsii* Elmer, Leaflets Philip. Bot. 1 : 223 (1907) ; type : *Elmer 8833*, Philippines, Luzon (holo-, NY ; iso-, A, BO, L).

Tree up to 45 m high ; bole erect up to 31 m high, and 1.6 m in diameter, sometimes buttressed at the base ; bark reddish brown or grey, roughened with numerous lenticels ; branchlets terete, brownish, in ultimate parts tomentose, but very soon glabrescent, dotted by numerous light brown lenticels. Stipules not observed. Leaves : rachis (1.5-)6-13 cm, sulcate in the distal part and there puberulous ; petiole (0.7-)1.7-5.5 cm long ; glands at the junctions of the pinnæ, 1-1.5 mm in diameter, elliptic to circular, raised, convex, pinnæ 2-3 pairs, opposite, sulcate, faintly puberulous, glabrescent, (2-)3.5-10.5 cm long ; glands at the junctions of all the leaflets to the distal pair only, 0.5-1 mm in diameter, similar to the rachis glands ; two smaller glands just above the pulvinous of the pinnæ ; leaflets rigidly chartaceous, petiolulate, 3-6 pairs per pinna, 1.2-8 × (0.7-)1-4.2 cm, ovate-elliptical, elliptical, obovate-elliptical to lanceolate-subtrapezoid, unequal-sided ; base symmetrically or asymmetrically cuneate, apex obtuse, shortly acuminate ; main vein central

or nearly so, lateral veins prominulous above and prominent and reticulate beneath ; both surfaces glabrous or the main vein puberulous.



Pl. 8. — Known distribution of **Wallaceodendron celebicum** Koorders.

Inflorescence : racemes solitary or paired (7-)10-23 cm long including the 5-16 cm long peduncle ; pedicels 0.6-1.2 cm long ; bracts ca. 2 mm long, triangular. Calyx rusty brown, (2-)3-5 mm long, cup-shaped, shortly tomentellous, margin inconspicuously toothed. Corolla light brown outside, white inside, (7.5-)12-16.5(-19) cm long, funnel-shaped, densely tomentose ; lobes (4-)5-9 mm long, triangular ovate to ovate-oblong, acute, reflexed. Stamens 3-4.5 cm long, white with sulphurous anthers ; tube 9-15 mm long. Ovary 1, densely tomentose to woolly, ca. 3-5 mm long ; stipe ca. 1-5 mm long.

Pod densely ferrugineously puberulous to tomentose when young, glabrescent, 9.5-20 × 2.5-4 cm, flat, with thickened margins, tardily dehiscent along both sutures ; valves with prominulous transverse veins along both sutures. Seeds brown, suborbicular, flat, ca. 13 mm in diameter and up to 2 mm thick ; areole ca. 10 mm in diameter with pleurogram parallel to the margin of the seed open towards the hilum ; funicle ca. 15 mm long.

Lectotype : *Koorders 29481*, Celebes, Menado (BO ; iso-, L).

Distribution : N. Celebes and the Philippines. — Pl. 8.

Ecology : Recorded from primary forest and sea-shore ; alt. up to 800 m.

Vernacular names : (Please see Merrill (1923) for the Philippine names) ; Celebes : Kajoe latoelo, Kajoe besi Papaea, Manoewek, Watoe-line (Belang).

Uses : According to Foxworthy (Philip. J. Sci., Bot. 2 : 376, 1907) the wood is moderately heavy and moderately hard with a specific gravity of 0.525. It is golden brown, with fine grain similar to *Albizia acle*. It is used for fine furniture and cabinet work, light construction, flooring, interior finish, siding, bancas, outriggers, telegraph poles ; recommended for railroad ties.

Note : Koorders (1898) did not mention any type specimen but cited the specimens and gave a good drawing later on (1918). The material of the Koorders collection at Bogor is rather fragmentary. There are not sheets with both fruits and flowers. The following numbers were studied : *Koorders 17536*, *17537*, *17538*, *17553*, *29481*, all from Menado, Sulawesi. No. *29481* has flowers, which are shown on a drawing attached to the sheet, too. It has a branch and some fragmented leaves. It is accordingly selected as type.

PARASERIANTHES Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 326 (1983).
— *Albizia* § 2 *Lophantha* Miq., Fl. Ind. Bat. 1 : 29 (1855).
— *Albizia* sect. *Lophantha* (Miq.) Fourn., Ann. Sci. Nat., Bot., sér. 4, 15 : 172 (1861) ; Kanis, Brunonia 2 (2) : 291 (1980).
— *Albizia* sect. *Lophantha* ser. *Pachyspermæ* Benth., Trans. Linn. Soc., London 30 : 559 (1875).
— *Albizia* sect. *Pachyspermæ* (Benth.) Fosberg, Reinwardtia 7 : 74 (1965), *p.p.*
— " *Gen. A* ", Nielsen in Polhill & Raven (eds.), Advances in Leg. Syst. : 184 (1981).

Type-species : *Paraserianthes lophantha* (Willd.) Nielsen (= *Acacia lophantha* Willd. ; *Albizia lophantha* (Willd.) Benth.).

Unarmed trees or shrubs ; stipules linear or filiform, caducous ; not spinescent ; leaves bipinnate, rachis and pinnæ with extrafloral nectaries ; leaflets opposite.

Inflorescence of pedunculate spikes or racemes, which are axillary, spikes sometimes arranged in panicles at the distal leaves ; flowers of the same part-inflorescence uniform,

bisexual, subtended by bracts, pentamerous ; calyx gamosepalous, valvate ; corolla gamopetalous, valvate ; stamens numerous, united into a tube at the base ; anthers quadrangular, minute, opening by two slits ; ovary solitary.

Pods chartaceous, flat, straight, not segmented, not reddish inside, the endocarp not forming envelopes around each seed, dehiscent along both sutures. Seeds subcircular-elliptical to oblong, flat to convex, with pleurogram, without aril, with a thick sclerified exotesta, unwinged ; endosperm absent, cotyledons large.

Seedlings : Known in two species, *P. lophantha* subsp. *montana*, which has a simply pinnate first eophyll, following leaves twice pinnate ; and in *P. falcataria*, which has twice pinnate and opposite eophylls. In both cases the germination is epigeal (D. Burger Hzn., 1972).

Pollen : Sexine/Nexine ratio : 1.3. Few tectal channels (10-25/100 μm^2). Pore diam. : 4-6 μm ; channels isometric. Nexine comparatively thick (1.5 μm in all species). Infrageneric variations : costæ in *P. lophantha*, 16 + 20 celled polyads in *P. toona* (in the same sample) ; raised areoles in *P. pullenii*.

In this genus the pollen characters are sufficiently divergent to allow a specific identification. But the genus is distinct having a thin exine and thick nexine. Pollen morphologically the genus is related to *Serianthes minahassæ* (few tectal channels), to *Albizia*, and to *Archidendropsis* subg. *Basaltica*. In *P. lophantha* costæ are found. They do not occur in the other genera studied here but occur again in several species of *Albizia*.

Key to the species

1. Flowers collected in solitary, axillary racemes ; pollen with costæ (pores surrounded by distinct thickenings) (A. Sect. *Paraserianthes*) ..... 1. *P. lophantha*
   1a. Young branches puberulous to tomentellous, rachis of leaves acuminate, inflorescence-bracts ca. 1 mm long, spoon-shaped ..... 1a. subsp. *lophantha*
   1a′. Young branches densely coarsely rusty tomentose to woolly ; rachis of leaves not acuminate ; inflorescence-bracts 3.5-7 mm long, ovate to linear lanceolate. 1b. subsp. *montana*
      1b. Stipules 0.5-1.7 cm long, subcordate, triangular or semiovate-lanceolate ..... 1b.a. var. *montana*
      1b′. Stipules 0.2-0.3 cm long, triangular-ovate ..... 1b.b. var. *kostermansii*

1′. Flowers in paniculate racemes ; pollen without costæ (B. Sect. *Falcataria*).
   2. Leaflets oblong to trapezoid, 20-60 × 8-25 mm, obtuse ..... 2. *P. pullenii*
   2′. Leaflets oblong (-falcate) to linear, 3-17 × 1-6 mm (obtuse-) broadly acute to cuspidate.
      3. Leaflets 1-1.5 mm broad, oblong-linear, broadly acute, main vein not parallel to the front margin, corolla subcampanulate to tubular, glabrous in the proximal part, puberulous at the apex of the lobes ; pod unwinged ..... 3. *P. toona*
      3′. Leaflets (2-)3.2-6 mm broad, oblong-falcate, (obtuse-) sharply acute (-cuspidate), main vein parallel to the front margin, corolla funnel-shaped, sericeous all over ; pod winged along the ventral suture ..... 4. *P. falcataria*
         3′a. Leaf-rachis puberulous to densely tomentose, pods puberulous, glabrescent ; petiolar gland 2-7(-9) mm long/diameter, raised.
            3′b. Main vein of leaflets removed (2/7-)1/5-1/7 of the width of the leaflet from the front margin ; lateral veins inconspicuous to prominulous beneath ..... 4a. subsp. *falcataria*

3′b′. Main vein of leaflets 1/3-1/4 of the width of the leaflets from the front margin; lateral veins prominulous beneath.....4b. subsp. *solomonensis*
3′a′. Leaf-rachis woolly, flocculose, pods very densely puberulous to tomentose, not or very tardily glabrescent; petiolar gland 1-2 mm in diameter, hardly raised..... ..... 4c. subsp. *fulva*

A. Sect. **Paraserianthes**

Flowers collected in solitary, axillary racemes; pollen with costæ (pores surrounded by distinct thickenings).

1. **Paraserianthes lophantha** (Willd.) Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 326 (1983).
— *Acacia lophantha* Willd., Sp. Pl. 4 : 1070 (1806); DC., Prod. 2 : 457 (1825).
— *Mimosa lophantha* Pers., Syn. Pl. 2 : 264 (1807).
— *Albizia lophantha* (Willd.) Benth., London J. Bot. 3 : 86 (1844); Fl. Austral. 2 : 421 (1864); Trans. Linn. Soc., London 30 : 559 (1875); Fourn., Ann. Sci. Nat., Bot. 15 : 175 (1861); F. v. Muell., J. Bot. 10 : 9 (1872); Back. & Bakh. f., Fl. Java 1 : 552 (1963); Steen., Mount. Fl. Java, *pl. 26-4* (1972); Bot. Journ. Linn. Soc. 79 (2) : 139, *fig. 23* (1979).
— *Mimosa distachya* Vent., Descr. Pl. Nouv. Jard. J.M. Cels 5 : 20 (1800), *non* Cav. 1795; type : not localized.
— *Albizia distachya* (Vent. *non* Cav.) MacBr., Contr. Gray Herb. 59 : 3 (1919).
— *Mimosa elegans* Andrews, Bot. Repos. 9 : t. 563 (1809).
— *Acacia insignis* Hoffmannsegg, Verz. Pflanzenkultur : 159 (1824).

1a. subsp. **lophantha**

Shrub to medium-sized, spreading tree up to ca. 8 m high; branchlets terete, but ridged by decurrent ridges from the leaves, densely puberulous to tomentellous in the distal parts, glabrescent; stipules 2 mm long, linear, broadest at the base, acute, puberulous, caducous. Leaves : rachis 12-23 cm long, sulcate on the adaxial side, densely puberulous, with some glandular hairs too, acuminate, petiole 3-7.3 cm, gland 1.5-3.7 cm above the base and at the junctions of the 1-2 distal pairs of pinnæ; petiolar gland 1-4 (-5.5) mm, elliptic to oblong, raised, flat (when active), distal glands small, circular; pinnæ opposite, 8-13 pairs (3-)5-12 cm long, puberulous, glands at the junctions of the 1-2 distal pairs of leaflets (sometimes absent), ca. 0.1 mm in diameter, circular, flat; leaflets opposite, sessile, chartaceous, 15-40 pairs per pinna, (4-)5-10 × (1.1-)1.5-3 mm, oblong, base asymmetrically truncate; apex acute, mucronulate; upper surface glabrous, lower glabrous or with adpressed hairs especially above the main vein; main vein starting at and diverging from the front margin, 2 accessory, prominulous veins starting from the same point.

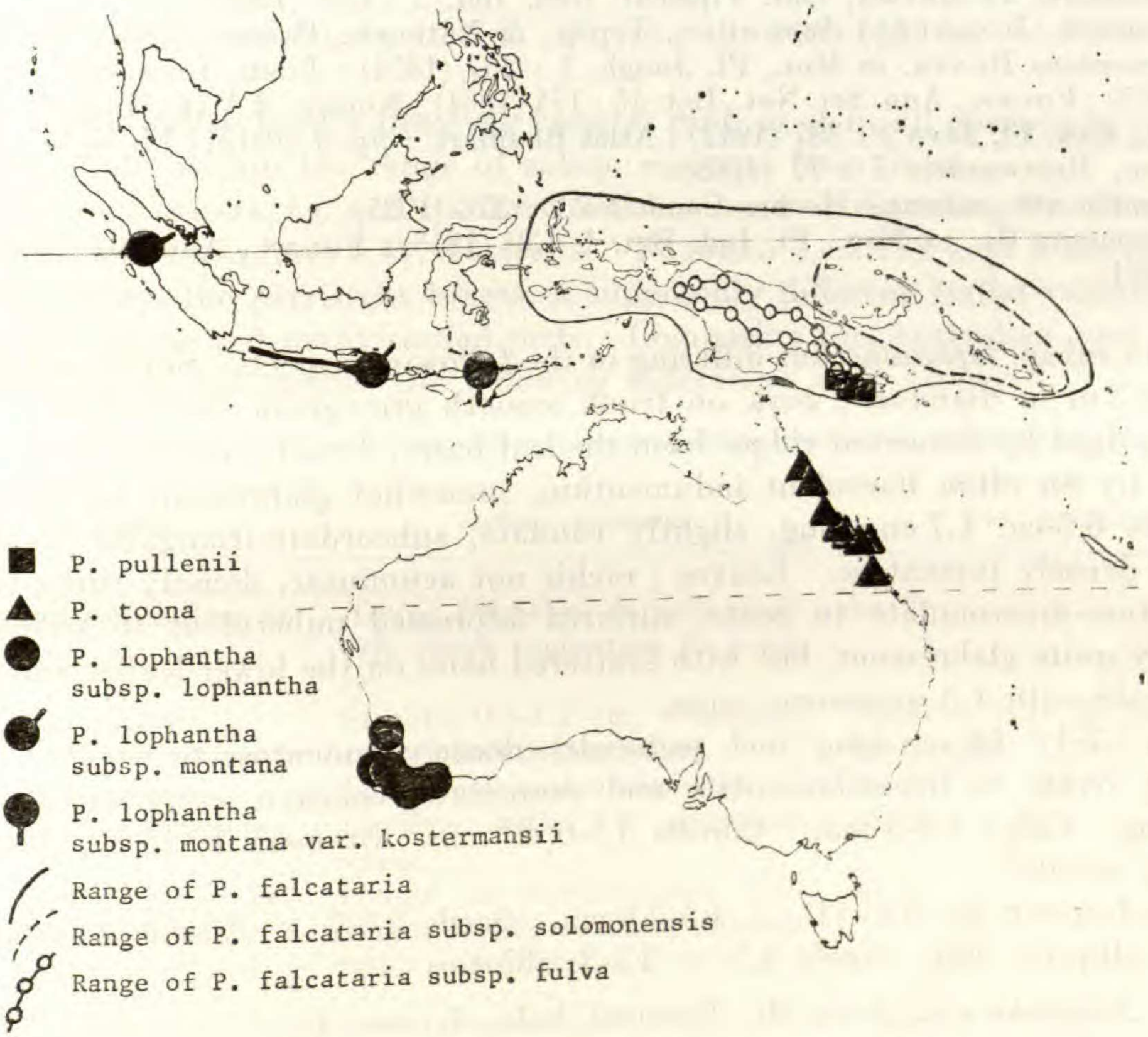
Inflorescences of pedunculate racemes in the axils of the distal leaves; racemes often paired 5.5-7.5 cm long (incl. peduncle ca. 2 cm long), densely puberulous with ca. 1 mm long, scarious, spoon-shaped, early caducous bracts, subtending the pedicellate flowers, pedicel 2-3 mm long. Flowers creamy. Calyx 2-3 mm long, narrowly cup-shaped, sericeous; teeth 0.7-1 mm long, triangular, acute. Corolla 4.5-7 mm long, funnel-shaped,

sericeous ; lobes (1-)1.5-2.5 mm long, ovate, acute. Stamens up to 20 mm long, tube (2-)3-5 mm long, shorter than the corolla tube. Ovary 4-4.5 mm long, glabrous, shortly stipitate or subsessile, stipe up to 2 mm long.

Pod yellowish to reddish, 9-12 × 1.6-2.4 cm, oblong, often with sinuate margins, glabrous, bullate over the seeds, with finely reticulate transverse veins, epicarp thin, membranaceous ; endocarp chartaceous, margins unwinged slightly raised. Seeds black, 6-8.5 × 4.5-5.5 mm, broadly elliptic, 3-4 mm thick, convex, areole 5-6.5 × ca. 3 mm, elliptic, open towards the hilum.

Lectotype : *s. coll.*, *s.n.*, " Habitat in Novæ Hollandiæ Littoribus occidentalis ", fl. (B-W).

Distribution : S.W. Australia, but cultivated throughout the tropics and the subtropics. — Pl. 9.



Pl. 9. — Known distribution of **Paraserianthes** Nielsen.

Ecology : In " Karri-forest " along roadsides, on seashore, sandy and lateritic soil, but ecological notes very sparse on specimens studied.

Notes : Fosberg (*l.c.* : 76) cited no type for this species, but mentioned that Willdenow and Persson cited the latter homonym, *Mimosa distachya* Vent. *non* Cav. in synonomy and that the type of *Mimosa distachya* Vent. *non* Cav. if found should be considered to be that of both *Acacia lophantha* Willd. and *Mimosa lophantha* Pers. The specimen in the Willdenow herbarium cited above is in flower, bears the handwriting of Willdenow and must be the type, as *Mimosa distachya* Vent. is an illegal name.

Fosberg included *Acacia lophanthoides* DC. (Prod. 2 : 457, 1825) in the synonomy of this species. This was based on a Bertero-collection from Jamaica (G-DC), which is sterile and has oblong, elliptic, broadly rounded leaflets a character out of place in this species.

1b. subsp. **montana** (Junghuhn) Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 327 (1983).

1b.a. var. **montana**

— *Acacia montana* Junghuhn, Nat. Tijdschr. Ned. Ind. 5 : 626 (1842).
— *Inga montana* (Junghuhn) Junghuhn, Topog. & Natuurw. Reisen : 288, 305 (1845).
— *Albizia montana* Benth. in Miq., Pl. Jungh. 1 : 267 (1851) ; Trans. Linn. Soc., London 30 : 560 (1875) ; Fourn., Ann. Sci. Nat., Bot. 15 : 174 (1861) ; Koord. & Val., Bijdr. 1 : 292 (1894) ; Koord., Exk. Fl. Java 2 : 357 (1912) ; Atlas Baumart. : *fig. 9* (1913) ; Fl. Tjib. : 109 (1923) ; Fosberg, Reinwardtia 7 : 77 (1965).
— *A. lophantha* var. *montana* Hochr., Candollea 2 : 373 (1925).
— *A. benthamiana* Bl. ex Miq., Fl. Ind. Bat. 1 : 30 (1855) ; Fourn., Ann. Sci. Nat., Bot. 15 : 174 (1861).

Close to subsp. *lophantha* but differing in the following aspects : Shrub or tree to 10 m high and 0.3 m in diameter ; bark on trunk smooth grey-green, lenticellate ; branchlets terete but ridged by decurrent ridges from the leaf-bases, densely coarsely rusty, tomentose to woolly, by an often flocculent indumentum, somewhat glabrescent but never totally so ; stipules 0.5-ca. 1.7 cm long, slightly caudate, subcordate-triangular — semiovate-lanceolate, densely tomentose. Leaves : rachis not acuminate, densely rusty tomentose ; leaflets obtuse-mucronulate to acute, surfaces adpressed puberulous to sericeous, most often nearly quite glabrescent, but with scattered hairs on the lower leaflet surface ; lower leaflet surface with 1-3 accessory veins.

Spikes 5.2-11(-18) cm long (incl. peduncle), densely tomentose to woolly ; bracts 3.5-7 mm long, ovate to linear-lanceolate and acuminate, concave, early caducous, pedicel 0-1 mm long. Calyx 1.5-3 mm. Corolla 4.5-6(-8) mm. Stamens 10-15 mm long. Ovary 2 mm long, sessile.

Pod red-brown 5.5-9.5(-11) × 1.4-2.6 cm. Seeds 5.5-7 × 3.5-4.5 × 2 mm, elliptic (— nearly elliptic), flat ; areole 4.5 × 2.5-3, elliptic.

Type : *Junghuhn s.n.*, Java, Mt. Tjeremai (holo-, L ; iso-, L).

Distribution : Sumatra, Java, Bali.

Ecology : Light montane forest, elphin forest, grassy plains, often used for reafforestation, often on crater-slopes ; recorded from an altitude of 600 m but most records are from 1500-3265 m on stony, open places ; shade intolerant.

Note : According to van Steenis (*l.c.*) the trees fruit at a young age (5-6 years), but then gradually decay because of the rust fungus *Uromycladium tepperianum.* The seeds, which have a hard, thick seedcoat germinates after the influence of fire or acids from the solfataras. This results in single dominant groves after the fires (cf. van Steenis, *l.c.*).

Vernacular name : Kemlandingan gunung (Java).

1.b.b. var. **kostermansii** (Fosberg) Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 327 (1983).
— *Albizia montana* (Junghuhn) Benth. var. *kostermansii* Fosb., Reinwardtia 7 : 79 (1965).

Differs from subsp. *montana* with whom it is closely related in the following aspects : Stipules triangular-ovate, 2-3 mm long ; calyx 1.5 mm long ; corolla 4-4.5 mm long.

Type : *Jaag 1517*, Flores : Keli Mutu, 1400 m (holo-, L).

Distribution : Lesser Sunda Islands : Flores ; alt. 1400-1525 m. — Pl. 9.

Notes : This entity hardly deserves varietal rank as it in all characters except that of the stipules falls within the range of subsp. *montana* from Java.

I follow van Steenis, *l.c.* and Backer & Bakhuizen in regarding this entity as conspecific with *A. lophantha* from S.W. Australia. Fosberg (*l.c.* : 78), kept it distinct because of the indumentum, the persistent bracts, a supposedly different leaflet-veination, longer racemes, larger bracts and many-seeded pods. Comparing the Australian and the Indonesian collections of this species the following differences were observed.

1 subsp. *lophantha*	2 subsp. *montana*	3 var. *kostermansii*
Young branches puberulous to tomentellous.	Young branches densely coarsely rusty tomentose to woolly.	as 2
Stipules 0.2 cm, linear.	Stipules 0.5-1.7 cm, triangular to semiovate-lanceolate.	Stipules 0.2-0.3 cm, triangular-ovate.
Leaf-rachis acuminate.	Leaf-rachis not acuminate.	as 2
Leaflets with 2 accessory veins.	Leaflets with 1-3 accessory veins.	as 2
Bracts of inflorescence ca. 1 mm long, spoon-shaped.	Bracts of inflorescence 3.5-7 mm, ovate to linear-lanceolate, acuminate.	as 2

All other characters are overlapping (e.g. dimensions of flowers and pods). It is, of course, a matter of taste how to treat geographically widely separated populations as the Javanese entity keys out quite easily. But lacking experimental evidence and fearing the consequences of a splitting if the same criteria have to be applied to other variable

species (ex. *Archidendron clypearia* and *Albizia saponaria*), I have reduced *A. montana* to subspecific rank.

B. Sect. **Falcataria** Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 327 (1983).

Type-species : *Paraserianthes falcataria* (L.) Nielsen.

Flowers in paniculate racemes or spikes ; pollen without costæ.

2. **Paraserianthes pullenii** (Verdc.) Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 327 (1983).
— *Albizia pullenii* Verdc., Kew Bull. 33 (3) : 408 (1979) ; Man. N.G. Leg. : 188 (1979).

Type : *Paijmans 747*, Papua, Central distr., Rigo subdistr., near Kvikila (holo-, CANB ; iso-, LAE).

Distribution : Endemic to Papua New Guinea. — Pl. 9.

Ecology : Hill rain-forest on shallow stony soil or gravelly sandy clay ; alt. 66-120 m.

Note : The inflorescence, the pollen characters and the general facies of this species strongly suggest a close relationship to *P. falcataria* although a mature pod is needed to establish its generic relationship with certainty.

3. **Paraserianthes toona** (Bailey) Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 327 (1983).
— *Albizia toona* Bailey, Syn. Queensl. Fl., 1. Suppl. : 18 (1886) ; Queensl. Woods : 50 (1888) ; Catal. Pl. Queensl. : 15 (1890) ; Queensl. Woods : 59 (1899) ; Queensl. Fl. 2 : 517 (1900) ; Compreh. Cat. : 164, *fig. 132* (1913) ; Domin, Bibliotheca Botanica 3 : 830 (1926) ; Francis, Austral. Rainf. Trees : 418 (1951).

Tree up to 20 m high and often over 1 m in diameter ; bark on trunk greyish ; branchlets brownish, lenticellate, tomentose in the distal parts, glabrescent ; stipules not observed. Leaves : rachis 9-37 cm long, densely pubescent above, glabrous beneath, slightly sulcate ; petiole 1.5-5 cm, gland 0.3-1.5 cm above the base, in young leaves 1.5-3 mm, circular to broadly elliptic, usually depressed, sessile ; in old leaves up to 4.5 mm long, raised, broadly elliptic, concave, similar gland at the junctions of the distal pair of pinnæ ; pinnæ 14-26 pairs, opposite to alternate, (1-)3-14 cm, puberulous, with 1-2, small, inconspicuous, circular glands below the junctions of the proximal pair of leaflets ; leaflets opposite, sessile, chartaceous (12-)30-75 pairs per pinna, 3-8.5 × 1-1.5 mm, oblong-linear ; base very asymmetrically obliquely truncate, apex broadly acute ; both surfaces glabrous to faintly pube-

rulous, margins occasionally ciliate ; main vein starting from the front margin running subdiagonally towards the apex, lateral veins inconspicuous to prominulous beneath.

Inflorescences of pedunculate spikes collected in tomentose panicles at the distal leaves ; panicle up to ca. 10 cm long, primary branches up to 8 cm long, spikes 1.5-2.4 cm long, bearing flowers in the distal half ; bracts less than 0.1 mm high, scarious. Flowers sessile to inconspicuously pedicellate, pentamerous, very light yellow. Calyx 3-3.5 mm, subtubular to subcampanulate, faintly puberulous, deeply unilaterally divided or split on two sides ; teeth irregular 0.1-0.5 mm, triangular-ovate, acute to obtuse. Corolla 5-6 mm, subcampanulate to tubular, glabrous in the proximal part ; lobes 1.5-2 mm, ovate to oblong, acute, puberulous especially at the apex. Stamens ca. 8-11 mm, tube 4-5 mm, equalling or exceeding the corolla tube. Ovaries 1(-2) substipitate, glabrous, ca. 1 mm long.

Pod reddish brown, chartaceous, flat, 11.5-12.5 × 1.2-1.8 cm, oblong with sinuate margins, dehiscent along both sutures ; valves glabrous (with a dense cover of glandular hairs when young, see note), with prominent, reticulate veins and only slightly raised margins. Seeds brown, 8-9 × 8-9 mm, subcircular, broadest in the distal part, flat ; areole 5.5 × 6 mm, open towards the hilum with pleurogram parallel to the margins.

Lectotype : *Bailey s.n.*, Queensland, Bowen (BRI).

Distribution : Endemic to Queensland Australia. — Pl. 9.

Ecology : Recorded from *Eucalyptus* and *Tristania* woodland ; dry rain-forest ; slopes behind the mangrove ; said to be locally common ; alt. up to 500 m.

Notes : Through the courtesy of Mr. L. Pedley, Queensland Herbarium (BRI) I have been able to typify this species, which was not typified by F. M. Bailey, *l.c.* Bailey noted that it came from " MacKay, Bowen, Endeavour River and other parts of tropical Queensland " describing the species in fruit. The Bailey specimen cited above comes from Bowen and has Bailey's handwritten manuscript description attached to the sheet. It is accordingly selected as type.

Fosberg (Reinwardtia 7 : 71-90, 1965) overlooked this species in his revision of *Albizia* sect. *Pachyspermæ* (= *A.* sect. *Lophantha*). *Hyland 2468 R.F.K.* from S.F.R. 144, Mt. Spurgeon has a juvenile, narrowly winged pod, which is covered by sessile glands, a character I have not observed in other specimens. According to Mr. Pedley it has brown heart-wood and has been found in several additional collections, but unfortunately not yet in flower, as it may deserve subspecific or specific rank. *Hyland 2314*, Windsor Tableland, N.E. of Mt. Carbine belongs here too.

4. **Paraserianthes falcataria** (L.) Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 327 (1983).

— *Adenanthera falcataria* L., Sp. Pl., ed. 2 : 550 (1762).

— *Albizia falcataria* (L.) Fosberg, Reinwardtia 7 : 88 (1965) ; Verdc., Man. N.G. Legum. : 182 (1979) ; Kosterm., Ceyl. J. Sci. (Biol. Sci.) 13 (1-2) : 256 (1979) ; Rev. Handb. Fl. Ceylon 1 : 503 (1980).

— *A. moluccana* Miq., Fl. Ind. Bot. 1 : 26 (1855) ; Koord., Meded. Lands Plantentuin 19 : 419 (1898) ; Exk. Fl. Java 2 : 358 (1912) ; Atlas Baumart. 1 : *fig. 8* (1913) ; Gibbs, Arfak : 211 (1917) ; type : " Poön Sikat der inlanders " Banda (holo-, L).
— *A. fulva* Lane-Poole, Rep. For. Res. Terr. Papua N. Guinea : 91 (1925) ; White & Francis, Proc. Roy. Soc. Queensl. 38 : 250 (1927) ; Fosberg, Reinwardtia 7 : 86 (1965) ; Verdc., Man. N.G. Legum. : 184 (1979) ; type : *Lane-Poole 263*, New Guinea, trail from Kokoda to the Gap (holo-, BRI ; iso-, K), *syn. nov.*
— *A. eymæ* Fosberg, Reinwardtia 7 : 87 (1965) ; type : *Eyma 5438*, New Guinea, W. Irian, Wissel Lake region (holo-, BO ; iso-, K, L).
— *Albizia falcata* sensu Backer, Voorl. Schoolfl. Java : 109 (1908) ; Schoolfl. Java : 437 (1911) ; Bekn. Fl. Java, ed. 5 : 10 (1940) ; Back. & Bakh. f., Fl. Java 1 : 553 (1963) ; Merr., Int. Rumph. : 249 (1917) ; Merr. & Perry, Journ. Arn. Arb. 23 : 395 (1942) ; Whitmore, Guide For. Brit. Solom. Isl. For. Rec. 2 : 81 (1966) ; Treefl. Mal. 1 : 277, *figs. 2, 13* (1972) ; Burk., Dict. (ed. 2) : 85 (1966).

Type : *Clypearia alba* Rumphius, Herb. Amb. 3 : 176, *tab. 111* (1743).

For further notes on the nomenclature of this species please see Kostermans (1979 : 256).

Distribution : Moluccas, New Guinea, The Bismarck Archipelago and the Solomon Islands. — Pl. 9, 10.

Ecology : Recorded from both primary and especially from secondary rain-forest, often on river flood terraces ; alt. sea-level to ca. 2300 m.

Uses : Cultivated in the tropics. Often used in reforrestation as it grows extremely quickly (cf. Trop. Legumes : Resources for the Future, National Academy of Sciences, Washington DC., 1979 : 173-177). The wood is soft and used as a substitute for pine. The bark can be stripped off and used for packing purposes. It is also used for canoes. Extensively planted as shade tree.

Notes : For a general description of this species, please see Fosberg, *l.c.* and Verdcourt, *l.c.* In the present treatment three subspecies are recognized.

4a. subsp. **falcataria**

Branchlets terete, slightly ridged by decurrent ridges from the leaf scars ; young parts of branches, inflorescence, leaf-rachis and pinnæ puberulous to tomentose ; petiolar gland below the proximal pair of pinnæ 2-7(-9) mm, elliptical to obtriangular, often raised and widened in the distal part ; leaflets (4-)6-15 × (2-)2.5-6 mm, main vein removed (2/7-) 1/5-1/7 of the width of the leaflet from the front margin, lateral veins inconspicuous to prominulous beneath; main vein and margin not setose ; calyx 1.5-2.7(-3) mm ; corolla (4-)5-6.5 mm ; pod 7.5-10.5 × (1.3-)1.5-1.7 cm, puberulous, glabrescent, yellowish, wing 0.1-0.3 cm.

Distribution : Moluccas and New Guinea ; alt. sea-level to 1600 m. Widely cultivated. — Pl. 10.

Pl. 10. — Known distribution of **Paraserianthes falcataria** (L.) Nielsen. Black arrows indicating transitional forms subsp. **falcataria** — subsp. **fulva**. White arrows indicating transitional forms subsp, **falcataria** — subsp. **solomonensis**.

4b. subsp. **solomonensis** Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 327 (1983).

Differs from subsp. *falcataria* in the following points : main vein of leaflets removed 1/4-1/3 of the width of the leaflet from the front margin ; rachis of leaves often very densely tomentose.

Branchlets terete, slightly ridged by decurrent ridges from the leaf-scars ; young parts of branches, inflorescence, leaf-rachis and pinnæ, puberulous to tomentose ; petiolar gland at or below the junction of the proximal pair of pinnæ, 3-6 mm, large, obtriangular, raised ; leaflets (7-)8.5-17 × (2.5-)4.5-6 mm, main vein removed 1/4-1/3 of the width of the leaflet from the front margin ; lateral veins prominulous to prominent beneath, main vein and margins setose ; calyx 1.5-2 mm ; corolla 4.5-5.5 mm ; pod 8.2-12 × 1.7-2.5 cm, puberulous, glabrescent, yellowish, wing 0.4 cm.

Type : *Brass 3223*, Solomon Islands, Ysabel Island, Tiratona ; alt. 600 m, fl., 26.11.1932 (holo-, A ; iso-, BO, L).

Distribution : Bismarck-Archipelago, Solomon Islands, a few off-shore islands N. of Papua New Guinea, Admirality Isl ; alt. sea-level to 600 m. — Pl. 9, 10.

Ecology : Lowland and montane rain-forest.

4c. subsp. **fulva** (Lane-Poole) Nielsen

Bull. Mus. natn. Hist. nat., Paris, 4e sér., sect. B, Adansonia 5 (3) : 327 (1983).
— *Albizia fulva* Lane-Poole, Rep. For. Res. Papua N. Guinea : 91 (1925).
— *Albizia eymæ* Fosberg, Reinwardtia 7 : 87 (1965).

Branchlets angled by strong decurrent ridges from the leaf-scars ; young parts of branches, inflorescence, leaf-rachis, and pinnæ densely tomentose to woolly ; petiolar gland at the junction of the proximal pair of reduced pinnæ, 1-2 mm in diameter, circular, hardly or not raised, often inconspicuous because of the dense indumentum ; leaflets 4-6 × 3.2-4.5 mm, main vein removed 1/3-2/9 of the width of the leaflet from the front margin ; lateral veins inconspicuous to prominulous beneath ; both and especially the lower surface densely puberulous to sericeous, margins and main vein ciliate-setose. Calyx 2.8-3.5 (-4.5) mm. Corolla 6.5-9 mm. Pod 9.5-12(-14) × (1.4-)1.7-2.8 cm, wing 0.3 cm, densely puberulous to tomentose, glandular, dark brown, not or very tardily glabrescent.

Type : *Lane-Poole 263*, New Guinea, trail from Kokoda to the Gap (holo-, BRI ; iso-, K).

Distribution : Endemic to the central mountainous part of New Guinea ; alt. 1250 to ca. 2 300 m. — Pl. 9, 10.

Ecology : Secondary forest and regrowth.

Uses : The bark is locally used as a substitute for soap.

Notes : Considered a distinct species by Fosberg, *l.c.* and Verdcourt, *l.c.*, although the latter noted that it probably would be best to consider this a subspecies of *Albizia falcataria*, the rank it has been given in this treatment. As can be seen from the descriptions, the differences between this entity and the main one are the woolly to densely ferrugineously tomentose indumentum of young parts, leaflets and pods. The ranges in the size of corollas are overlapping, although only slightly. A couple of specimens, *Blackwood 177* (A) which has adpressedly puberulous leaflets and *Brass & Versteegh 12575* (A), which has a strongly ciliate basal leaflet margin, calyx 2.2 mm and corolla 7-8 mm are transitional forms.

(To be continued)